REMARKS

Amendments to the Specification and Claims

Claims 1-37 were pending in the application. Claims 1-37 have been canceled and new claims 38-99 have been added. Accordingly, upon entry of the amendments presented herein, claims 38-99 will remain pending in the application.

No new matter has been added. Support for the amendments to the claims and specification can be found in the claims and throughout the specification as originally filed. In particular, support for the amendment to the specification at page 4, line 28, in which the description of Figure 7 has been corrected to indicate that "CoQ10 increases the proliferation of human neonatal fibroblasts" can be found at least in original Figure 7. Support for the amendment to the specification at page 5, line 9, in which the description of Figure 14 has been corrected to indicate that the "average tumor mass in the 10% CoQ10 and 15% CoQ10 treatment groups decreased by 52.3% and 54.0%, respectively, as compared to the control" can be found at least in original Figure 14, as well as in Figure 14 and at page 48, lines 23-25, as amended in an Amendment Under Article 34 filed December 13, 2005 in the international PCT Application PCT/US05/01581, to which the present application claims priority. For the Examiner's convenience, a copy of the Amendment Under Article 34 is submitted herewith as Appendix A.

Support for new claim 38 can be found at least in original claim 8 and at page 2, line 34 through page 3, line 22 of the specification. Support for new claim 39 can be found at least in original claim 8 and at page 32, lines 15-18 of the specification. Support for new claims 40, 74, 81 and 94 can be found at page 13, lines 1-2 of the specification. Support for new claims 41, 75, 88 and 95 can be found at least at page 12, lines 28-29 and at page 16, lines 15-18 of the specification. Support for new claims 42, 76, 89 and 96 can be found at least at page 12, lines 18-19 and page 15, line 28 through page 16, line 2 of the specification. Support for new claims 43-44, 78-79, 91-92 and 98-99 can be found at least in original claims 17 and 18. Support for new claim 45 can be found at least at page 8, lines 3-5 of the specification. Support for new claim 46 can be found at least at page 9, lines 3-9 of the specification. Support for new claims 47-51 can be found at least at page 9, line 10 through page 10, line 6 of the specification. Support for new claims 52-53 can be found at least at page 8, line 23 through page 9, line 2 of the specification.

Support for new claims 54-59 can be found at least at page 8, lines 5-6 and page 13, lines 2-4 of the specification. Support for new claim 60 can be found at least at page 22, lines 10-12 and 32-34, and at page 23, lines 6-7. Support for new claims 61-65 can be found at least in original claim 12 and at page 24, line 20 through page 25, line 5 of the specification. Support for new claim 66 can be found at least at page 22, lines 18-21, and page 36, lines 6-10. Support for new claims 67-69 can be found at least in original claim 13 and at page 23, lines 3-7 of the specification. Support for new claim 70 can be found at least in original claim 15 and at page 11, lines 13-15 of the specification. Support for new claim 71 can be found at least in original claim 20 and at page 33, lines 7-10 and in Examples 1 and 4. Support for new claim 72 can be found at least in original claim 30 and at page 19, lines 27-33. Support for new claims 77, 90 and 97 can be found at least at page 2, line 34 through page 3, line 22 of the specification. Support for new claim 73 can be found at least in original claim 16. Support for new claim 80 can be found at least in original claim 20. Support for new claims 82-87 can be found at least in original claims 23-29.

Amendments to and cancellation of the claims should in no way be construed as an acquiescence to any of the Examiner's rejections and were done solely to expedite the prosecution of the application. Applicants reserve the right to pursue the claims as originally filed in this or a separate application(s).

Interview Summary

Applicants respectfully thank the Examiner for the helpful comments provided in the personal interview that took place on November 11, 2009 at the U.S. Patent and Trademark Office, during which proposed new claims were discussed.

Description of Data Contained in Originally Filed Specification
Showing Therapeutic Efficacy of Topically Administered Coenzyme Q10 on Tumors In Vivo

The new claims presented herein are generally directed to methods of treating cancer, inhibiting tumor cell growth, inducing apoptosis in a tumor cell and inhibiting tumor mediated angiogenesis in a subject, comprising ***topically administering*** to a subject in need thereof a

composition comprising Coenzyme Q10. As discussed during the aforementioned interview of November 11, 2009, these claims are based on the surprising and unexpected discovery that ***topical administration*** of a composition comprising Coenzyme Q10 to tumor bearing animals is dramatically effective in treating the tumor. Applicants' specification as originally filed describes an experiment in which each of eight mice were inoculated with two melanoma tumors by injection with SK-MEL28 cells (see Example 3 at pages 48-49 of the specification). The treatment group was treated daily with a topical formulation of Coenzyme Q10 (either 1.0% or 1.5%) for 30 days. The tumors from the treatment (four mice) and control groups (four mice) were then excised and the mass of the tumors was determined. The results of this experiment demonstrate a striking and statistically significant reduction in tumor mass in the mice topically treated with Coenzyme Q10 as compared to control mice (see, *e.g.*, Figures 11-13 and, in particular, Figure 14, of the application). Specifically, Figure 13, reproduced below, is a photograph showing the dramatic difference in size of tumors excised from the Coenzyme Q10 treated mice as compared to control mice.

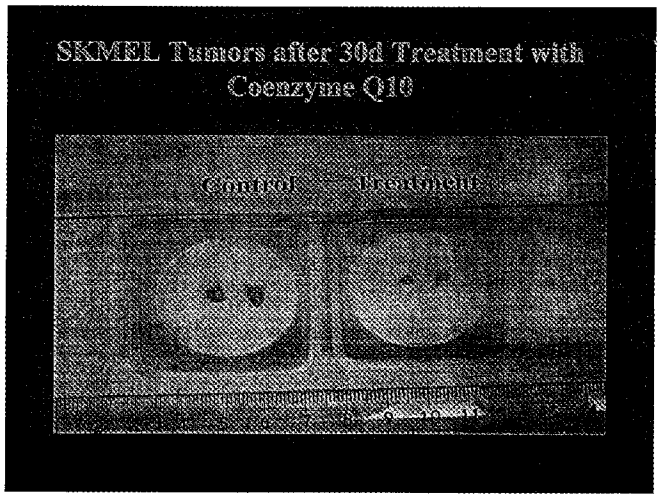
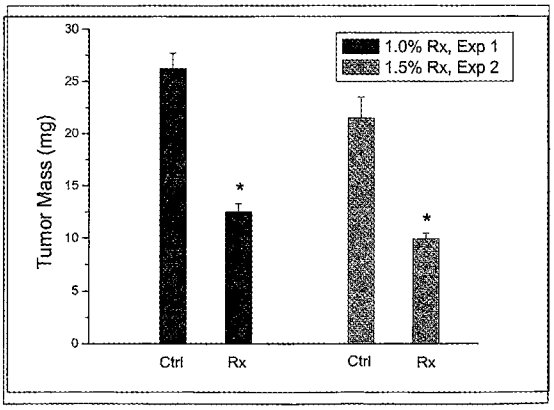


Figure 14, also reproduced below (as amended in an Amendment Under Article 34 filed in priority international PCT Application PCT/US2005/001581 on December 13, 2005, a copy of which is submitted herewith as Appendix A), is a graphical representation of the results showing that the average tumor mass decreased by 52.3% and 54.0% in the 1.0% and 1.5% Coenzyme Q10 treatment groups, respectively, as compared the control.

Effect of Topical CoQ10 on SKMEL28 Tumor Mass in Nude Mice



Moreover, Applicants' specification as originally filed provides experimental results showing that treatment with a composition comprising Coenzyme Q10 results in inhibition of tumor-mediated angiogenesis in a tissue as compared to untreated control tissue (see, *e.g.*, page 19, lines 31-33 and Figures 29A and 29B of the specification).

The foregoing experimental results obtained *in vivo* demonstrate the striking effect of topical administration of Coenzyme Q10 to inhibit tumor growth and tumor-mediated angiogenesis.

Description of Data Contained in Originally Filed Specification
Showing Inhibition of Cell Proliferation by Coenzyme Q10 in Panel of Cancer Cell Lines

Consistent with the foregoing results obtained *in vivo*, Applicants' specification as originally filed also describes a series of experiments in which a panel of human cancer cell lines, including a melanoma cell line (SK-Mel28), a squamous carcinoma cell line, three

different breast adenocarcinoma cell lines (MCF7, SK-BR-3, MDA-MB-468 and BT-20), a hepatocullular carcinoma (Hep 3B), an osteosarcoma cell line (143B) and a prostatic adenocarcinoma cell line (PC-3), as well as control cells (human neonatal fibroblasts and human neonatalkeratinocytes), were treated with Coenzyme Q10 over a range of concentrations *in vitro*. The effect of Coenzyme Q10 on the proliferation of cells was assessed by determining cell number in the treated cells as compared to the vehicle control (see, *e.g.*, Example 1 at pages 42-48) . The results of these experiments show that Coenzyme Q10 treatment results in a statistically significant ***inhibition*** of proliferation of the cancer cells (see Figures 1-4, 6, 9, 10 and 15-27) and a statistically significant ***increase*** in the proliferation of non-cancer control cells (see Figures 7 and 8). The effect of Coenzyme Q10 on cells was also assessed by analyzing the induction of apoptosis in treated cells as compared to vehicle control using both an Annexin-VPE assay and mitochondrial membrane dye assay (see, *e.g.*, Example 1, page 42, line 15 through page 43, line 10; and Example 4 at page 49). The results of these experiment show that Coenzyme Q10 ***selectively induces apoptosis*** in human melanoma cells as compared to control fibroblasts (see Figure 5) and, further, induces apoptosis in human prostatic adenocarcinoma cells (see Figure 28).

The foregoing results evidencing the ability of Coenzyme Q10 to selectively inhibit tumor cell growth and induce apoptosis in cancer cells *in vitro* support the above-described results obtained *in vivo*. Together, the data provided in Applicants' originally filed specification demonstrate that topically administered Coenzyme Q10 is unexpectedly and strikingly effective in inhibiting tumor growth.

In view of the foregoing, Applicants respectfully submit that the pending application is in condition for allowance.

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Respectfully submitted,

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